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ABSTRACT

This paper focuses on new ways of viewing the educational system by affecting change via small, initial adjustments. A number of fundamental ideas are presented that could be implemented by states, either individually or collectively, to change current educational systems into Information Age systems. Taking the cue from Chaos Theory, which states that all systems have a sensitive dependence upon initial conditions, the following small conceptual variations are suggested that might result in large substantive changes: (1) change the endorsement of teachers from certification to licensing; (2) change the school system from a time constant-achievement variable status to an achievement constant-time variable status; (3) recognize that it is the individual who learns, and not the group; (4) recognize that the learner is the customer, not the product; (5) adopt the Deming system of profound knowledge; (6) change the funding method of schools--funding should go directly to schools, be related to the satisfaction of the customer, and be established by the quality of the product; (7) adopt ideas from the new sciences; (8) emphasize creativity; (9) require that all educational activities be based upon verifiable learning theories; and (10) use technology in new ways. (Contains 24 references.) (AEF)

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# Educational Reform: Ten Ideas for Change, Plus or Minus Two

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# Educational Reform: Ten Ideas for Change, Plus or Minus Two

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It is the intent of this paper to foster discussion toward new ways of viewing our educational system by effecting change via small, initial adjustments. These initial changes have the potential to change our present, outdated, Industrial Age school system to a modern, Information Age system, where the emphasis is on learning and not teaching.

Since the publication of A Nation at Risk (1983), both educators and non-educators have proposed solutions to the nation's educational problems. These solutions range from a total rebuilding of our educational system to numerous band-aid approaches. The band-aid approach yields little and tends to perpetuate the status quo. Those in power have nothing to gain from a reformation. It is axiomatic that what bureaucracies do best is to maintain themselves. Thus, for the past one hundred years we have seen little change in an educational system built to sustain an industrial economy.

It can be argued that the only way for systemic change to occur is through a total extirpation of the present, state-centralized model and construction of a new, decentralized system built for an information economy. In fact, there are some convincing arguments for this. (Perelman, 1994; Wilson & Daviss 1994; Gerstner 1995; and Lieberman 1995). Perelman even contends that our educational system will collapse in a few years because of its own internal, bureaucratic, centralized controlled model, in much the same way as the Soviet Union collapsed - almost overnight. While this total collapse remains to be seen, it is quite evident that major changes, which address the root causes of the present system's failures, are needed.

K-12 education is, Constitutionally, left to the individual states. While the federal government can set national goals, guidelines, and, in some cases mandate monumental laws, no one is seriously arguing for federal control of our school system. Control of individual school systems will remain within the province of the individual states. The problem of reform is for the states, both individually and collectively, to solve.

Thus, we present a number of fundamental ideas that could be implemented by states, either individually or collectively, to change our current educational systems into Information Age system. Taking our cue from Chaos Theory, which states that all systems have a sensitive dependence upon initial conditions, we suggest a series of small conceptual variations to our present educational system that might, in turn, result in large substantive changes.

### Idea 1: Change the endorsement of teachers from certification to licensing

As it now stands, teachers are sanctioned to teach by the state through a process of certification. Prospective teachers take courses specified by the state, from universities accredited by an agency, usually determined by the state. Before becoming a full-time teacher, an individual must receive certification in one or more subject matters from the state. Although there are a few exceptions, this is the rule that operates in most states. It is the primary rule that controls the system.

The university that one attends generally has little choice in determining what courses a prospective teacher studies. The state, in essence, determines the amount of time spent in taking courses, the types of courses studied, the content of the courses, and the acceptable performance level to be declared a teacher. The state, not a professional school, determines what it takes to become a teacher.

Consider how physicians, lawyers, and other professionals are sanctioned by the state. They are not certified, but licensed, to practice their discipline. They obtain this license by taking an examination created by their respective profession and administered by the state. The profession determines the criteria one must meet to practice.

To become a doctor or lawyer, an individual attends a professional law or medical school. The school determines the course content, and the time spent learning the profession. Graduation from the school does not ensure that the graduate will practice. It is up to the profession as a whole to determine that. The role of the state is to administer an examination designed by the profession. There is no Department of Medicine nor a Department of Law to specify what a doctor or lawyer should know. In other words, the



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state serves as a regulatory agent only and not as the specifying body of content, as is done in education.

Teachers should be licensed and not certified. Furthermore, the state should get out of the business of dictating what skills, knowledge or information a teacher should possess. The consequences of such a change would range far and deep into our educational system. Removing from the state the power to dictate the specifics of curriculum, and other matters to the education profession, would result in colleges of education becoming more proactive and competitive in their preparation of teachers. Certainly, the standards of the profession would increase just from the competition among professional schools of education. The entire curriculum of education, now dictated by the state, would change. Just as in medical schools, specialties would increase, internships would be longer, residencies would arise and teachers would be much more expert in their discipline.

Licensing would give teachers an incentive to become educational entrepreneurs. They might form groups with other licensed teachers to operate charter schools. Supply and demand would come into play. Public and private schools would vie for these new kinds of teachers. Parents would demand that the best teachers are hired and the worst fired. Licensing would encourage the free enterprise system to operate. Vouchers of some sort might gain acceptance. The change from certification to licensing would have a domino effect throughout the system. No one can tell the eventual results. However, we do know that licensing, not certification by the state, is the model for the Information Age.

### Idea 2: Change the school system from a Time Constant – Achievement Variable status to an Achievement Constant – Time Variable status

Our present school system embraces a model that keeps the time constant and varies the achievement level. We require learners to spend a pre-specified amount of time in the classroom, but allow them to exit with different levels of competency. This model was designed and needed for an industrial economy. School usually lasts 180 days per year. Learners spend six-eight hours in school per day and classes are based upon a strict time allotment of minutes per hour. In an industrial economy, time is the major factor. Workers must be on time, they must work a specific number of hours, and their reward is based upon the time spent at the workplace. Thus, schools were designed and operated to prepare learners to function in this time oriented paradigm. Although some learners accomplished more or less than other learners, all were equally conditioned to punch the clock.

For an industrial economy, this is a good model. For an information economy, it is a bad model. We suggest a simple reversal of the situation currently in place. Moving to an achievement constant – time variable model would change the way schools operate, take into account the different abilities of learners, and conform to contemporary learning theories. For example, schools could be open 24hours/day 365 days/year. Learners would progress through the systems at different rates. They would enter and exit at different times, and they all could accomplish an acceptable level of achievement. Many different programs could be offered at the same time to accommodate the distinct learning styles and life goals of the learners. The worth of a school would be based upon how well it educated its learners as opposed to how many attend each day. The reverberations through our entire society would be enormous.

### Idea 3: Recognize that it is the individual who learns, and not the group

It is interesting to note that most measurements about the accomplishment of schools, school districts, and state education requirements are based upon the assessment of the group and not the individual. This is what we call the statistic of the average. We also call it a fatal flaw in education.

Here is a trivial example. We call it Method A vs. Method B. Assume that we want to test the effectiveness of a new instructional method, say, computer assisted instruction (CAI). We set up a comparison experiment between CAI (Method A) and the traditional classroom method of Instruction (Method B). After completion of the experiment, the researchers compile the mean scores and variability measurements of each group, and then use a simple test statistic to determine if a real difference in achievement exists between the two groups. Let us say that the mean score of the CAI group was significantly higher than the traditional group. Based upon this data, the researcher concludes that the CAI instruction is superior to traditional instruction.

However, there is a problem. What we have done is to measure the group's performance, but in the process, we lost all information about the individual. As soon as we calculate the mean score of each group, each individual's achievement is lost. We call this the fatal flaw because, from contemporary learning theory, we know that it is the individual who learns and not the group. In other words, classrooms do not learn, individuals do.

All kinds of decisions in education are made based upon group data. State mandated tests and Goals 2000 are all based upon the statistic of the average — the fatal flaw. Although this statistic of the average works quite well for plants in a pot, pigs in a pen and beans in a barrel, it does not work for learners in a school. What we as educators must address is the learning of the individual. We must design systems that are adaptive to the individual. We must design new assessment procedures for determining individual achievement. We must move away from the statistics of the group and derive new statistics for the individual.

### Idea 4: Recognize that the learner is the customer, not the product

Although some would argue that the learner is the product of our educational institutions (Glasser, 1990), others would argue that the learner is the consumer/customer (Harris & Baggett, 1992; Tribus, 1997). Most school systems view the learner as the product. We define the educational system as the seller, education as the product and the learner as the consumer. Although it is possible to identify other consumers of the schools' product, the primary consumer remains the learner.

In addition, we must recognize that our product is education or more specifically information and knowledge. Thus, it is imperative that educators continuously try to improve the product for the satisfaction of the consumer. Given this, then why is it that we in education blame (fail) the consumer when our product fails? Should we not review our product and try to improve it? Of course, but as present educational systems are configured this is not possible until we recognize who is the consumer and what is our product.

### Idea 5: Adopt the Deming system of profound knowledge

Most educators know of W. Edwards Deming and his fourteen points of Total Quality Management (TQM). These points are derived from his system of profound knowledge (Deming, 1997).

Deming provides not only a philosophy, but also a process for success. Many educators use the word quality with little or no understanding of its true meaning. Most of us fail to recognize that quality is a process, and that the pursuit of quality is never ending. We contend that if educators concentrate on quality, they can completely restructure the way that administrators lead, teachers teach and learners learn. Combined with technology, Deming's philosophy is a powerful tool for the design of Quality Schools (Cafolla & Kauffman, 1993).

### Idea 6: Change funding method of schools. Funding should go directly to schools, be related to the satisfaction of the customer and established by the quality of the product

The manner of funding schools via school districts must change to the direct funding of the schools themselves. If a school is successful, the money will follow. Alternative ways to fund schools should be examined. If you change the fundamental structure of the system via the ideas presented herein, new avenues of funds will open. Most certainly, a voucher system of some sort will be implemented. This places the money in the hands of the consumer and not the bureaucracies that manage and determine the system's policies. If vouchers are given directly to individual schools or teachers by the consumer, new school systems, such as charter schools and other models will emerge. Our school system should be placed under the free enterprise umbrella. Schools that work will prosper, those that do not will fail.

### Idea 7: Adopt ideas from the new sciences.

Chaos theory, cognitive science, complexity, artificial life, artificial intelligence and criticality are but a few of the new sciences that offer a deeper view into how the human mind works and how humans learn (Bailey, 1996; Dennett, 1996; Coveney & Highfield, 1995; Holland, 1995; Levy, 1992; Kauffman, 1995). For example, Resnick (1997) sets forth a theory of learning called Contructionism that emphasizes two different views of Constructivism.

Other ideas, including emergent systems, simple rules that result in complex behavior, and an evolutionary process that continually adjusts the brain to the surrounding environment by maintaining the brain in a state of criticality are all ideas that relate to learning. (Bak 1996). As educators who have held to the discredited ideas of behaviorism much too long (Gardner, 1987), we must reorient our methods, and revise educational content to fit into an Information Age, and thereby transform teacher training into teacher education..

### Idea 8: Emphasize creativity

There is a critical need for a better balance in training divergent thinking, as compared to convergent thinking. Teachers can cultivate learning experiences by providing creative environments that emphasize the comprehension of facts over their memorization. A recent study conducted by Hamza (1996) revealed several factors that seem to promote a creative learning environment. Some of these are the teacher's knowledge, character traits, teaching style, passion and attitude toward learners, the learning climate, teacher-learner interaction, and learner attitudes. It is also observed that learners favor creative, open, and non-threatening environments over those governed by authority and conformity. Schools commonly do not reinforce creative thinking nor do they aim to foster creative environments. These deficiencies appear to significantly hinder learners' abilities to become productive workers. (Carr, 1994; Drucker, 1986)

### Idea 9: Require that all educational activities be based upon verifiable learning theories

Learning theories, teaching methods, and research are extremely significant sources of ideas for educators at all levels. For example, communication theories can help teachers understand the process of communication between learners and themselves. Systems theories give teachers a better understanding of the working of various systems and their subcomponents. Instructional design theories help teachers build a system of professional expertise for diagnosing learning problems, and prescribing possible solutions. Cognitive learning theories can help educators understand the nature of skilled intellectual performance. (Means, 1994). Theory based learning must be one of the fundamental building blocks of any new educational system.

### Idea 10: Use technology in new ways

The computer provides educators with a unique and universal tool. It gives educators the resources to simulate real-life events, investigate the nature of living and non-living entities, perform complex experiments, build new systems, and allow learners to create unique environments and systems from scratch (Papert, 1993). The computer combined with the Internet provides learners with immediate access to the largest amount of information and knowledge ever to be collected in history.

Although distance learning is not a new idea, new models are being designed and used. The Internet and the advances in programming tools for implementing learning models via the World Wide Web provide a unique opportunity for educators to broaden their sphere of influence from the local classroom to the cyberspace classroom. Using sophisticated tutorials, educators can reach the individual learner wherever he/she may be, at any time.

Technology gives us the ability to displace both time and place as the main functional components of traditional schooling systems. The possibilities are endless. Within our imagination, it is not impossible to conceive of the end of the traditional schooling system, when it is recognized by educators, learners, parents and legislators that learning does not necessarily have to occur in a place called school.

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